VARIO PRESS® 300
VARIO PRESS® 300.e

en 230/240

zubler
innovative dental products

Operation Instructions 01 2014 / Rev. 1 USB

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Signs and Symbols

Risks and dangers

This symbol marks safety instructions that must be followed to prevent injury or death

Caution Hot Surface

Burn hazard

Risks of crushing/pinching

Conflict

Risk of electric shock

Attention:

It is critical that the user completely read the operating manual prior to start up! It contains important information on safety, operation and maintenance that is designed to protect you and prevent damage to the instrument.
Please pay particular attention to the safety information on pages 6 - 11.

* e.max Press is a registered trade mark of Ivoclar Vivadent

0. Introduction

0.1 Conformity Declaration

We, Zubler Geraetebau GmbH
Buchbrunnenweg 26
89081 Ulm-Jungingen, Germany
www.zubler.de

hereby declare, that the ceramic furnace product

VARIO PRESS® 300.e
VARIO PRESS® 300

are in compliance with the protective requirements in accordance with the provisions of the following directives:

2006/42/EG Machines Directive

2006/95/EG Low-Voltage Directive

2004/108/EG EMV Directive.

In the event of any amendments being made to the product without our agreement, then this statement shall no longer be valid.

Ulm, den 15. July 2005

Kurt Zubler
Managing Director

CE

INTERTEK ETL LISTED c US

3Ø89Ø56

ETL LISTED
CONFORMS TO
UL STD 61Ø1Ø-1
CERTIFIED TO
CAN/CSA STD C22.2 NO 61Ø1Ø-1

0.2 General

The correct processing of modern dental ceramic materials is placing even higher demands on dental technicians. We believe that the **VARIO** 300 furnaces meet these requirements by providing the latest technology for current and future ceramic processing.

The software installed in the **VARIO** 300 series enables you to optimize firing management for all layered and pressed ceramics available on the market and guarantees maximum levels of performance in processing the **press-to-metal®*** technique.

The use of materials of the highest quality increases the lifetime of the furnace, enabling you to reproduce optimal results over many years.

Our priority is to ensure that you will be able to produce top-quality ceramic prosthesis using our **VARIO** 300 furnaces for many years. We will therefore keep you informed of any changes to the software or extension of the processing possibilities.

We hope that the ceramic furnace provides you with great success and satisfaction and congratulate you on the choice you have made.

* press-to-metal® is a registered Trademark of Zubler Gerätebau GmbH Germany

0.3 Setting up the furnace

In the event that the packaging materials and/or the ceramic furnace appear to have been damaged contact your dealer (see Page 32) immediately and do not unpack the product.

Open the large carton and remove the two white boxes. Take out the furnace and put it down in the desired location. Note that the furnace is heavy and should always be lifted and transported by two persons.

Take the vacuum pump out of its box, put it down near the furnace and remove the safety foam.

Please make sure to retain the original cardboard boxes and other packaging materials. You will need to have them handy if returning the device for service.

Vacuum pump onnection

Remove the short transparent vacuum hose with its filter from the small white box and attach it to the connector marked "VACUUM" at the back of the furnace.

Attach the long transparent hose to the free end of the filter. Connect the other end of the long transparent hose to the vacuum pump. Finally, connect the vacuum pump and the furnace using the vacuum pump power cord.

Compressed air connection

The smaller of the white boxes contains the accessories needed for the compressed air connection.

Use the two screws provided to connect the pressure regulator **vertically** to the housing of the vacuum pump or secure it elsewhere in the laboratory in the immediate vicinity of the furnace.

Measure the distances from the compressed air supply to the pressure regulator and from the pressure regulator to the ceramic furnace. Split the blue compressed air hose into two lengths of hose accordingly.

Use one part of the blue compressed air hose to connect the output connector of the pressure regulator ("OUT") to the back of the furnace.

Secure the other part of the blue compressed air hose to the input connector of the pressure regulator ("IN") and connect the entire assembly to the compressed air supply of your laboratory.

The pressure regulator has been pre-set to an input pressure of 0.6 MPa (= 6.0 bar).

If additional equipment (sandblasting units, pressure pots etc.) are connected to the compressed air supply, ensure that the pressure does not drop below 0.5 MPa (= 5.0 bar):

Air pressure 0.6 MPa in accordance with ISO 8573.1:

	Dust	Water	Oil
Class	**1**	**4**	**1**

Electrical connection

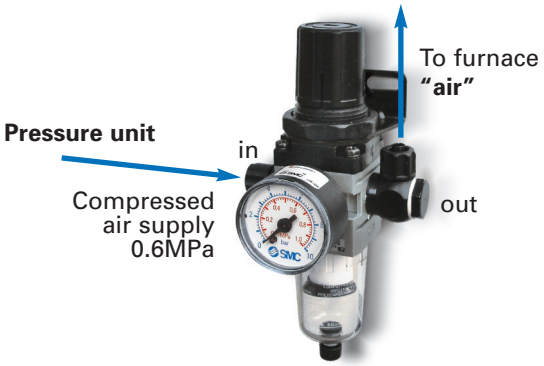
The ceramic furnace is supplied with a 230V or 240V AC 50/60Hz internal power supply. You must connect the furnace to the proper supply voltage. You cannot switch the supply voltage on the furnace. A power cord is supplied together with the ceramic furnace.

Under no circumstances should you use any other power cable or any extension cable. If this ceramic furnace is in a circuit with other furnaces or electrical appliances with high power requirements (e.g. multiway connector at the desk), this can result in the fuse being blown or inconsistent processing results. Connect the power cord to the power connector on the reverse side of the ceramic furnace and then connect this with a grounded power outlet.

Switching on the furnace

As soon as the oven is switched on the lift will automatically lower to its maximum open position.

In order to avoid any overheating and resulting deformation of the aluminium lift table, please immediately insert the firing or pressing brick!!!



0.4 Basic settings

Once you have turned on the device, the display will show the “Main Menu”. Pressing the green “Enter” key will activate the current menu selection. The red “Esc” key will return you to the previous menu, all the way back to the “Main Menu”.

Vacuum test

Main Menu → Set-up oven → Diagnostic tests → Service tests → Vacuum test

The oven starts to generate vacuum. After 2 minutes the pump stops automatically. The leakage test starts. During this test (duration 2 minutes) the decrease of vacuum is measured. After this procedure "Set Vacuum" will appear on the screen. Press the "yes" button and enter the value.

Example: Value achieved: 760 mm; subtract 20 mm; enter 740 mm as your individual vacuum level.

If the vacuum test was performed under conditions of very high barometric pressure, repeat the vacuum test when weather conditions have returned to normal.

Setup program

Before you operate the ceramic furnace for the first time, please run the “Run pre-heat/dry program”. This enables you to ensure that the firing chamber is free of any residual humidity, which could have a negative impact on the firing results.

Main Menu → Set-up oven → Diagnostic tests → Run pre-heat/dry prog.

Select this option and confirm by pressing the green "Enter" key. The device will execute a program that takes approximately 15-20 minutes to run. This is intended to set up the device after storage and transport.

The firing platform will remain slightly open to allow any residual moisture to escape.

Idle temperature

For safety reasons, the idle temperature has been set as low as 80°C for delivery.

Main menu → Set-up oven → Change idle temperature

If using the Vario as a combination or dedicated ceramic furnace we recommend setting the idle temperature to the lowest entry temperature of your ceramic brands.

If using the Vario as a dedicated pressing oven, we recommend setting the idle temperature to the lowest entry temperature of your pressable ceramic brand (700°C / 1292°F).

General notes

If you are using the **VARIO PRESS®** 300 strictly as a firing oven, make sure the device is constantly connected to compressed air. Otherwise the position of the pressing plunger may stay in it's extended position and damage objects on the firing tray

The warm-up program on the "Main Menu" has been pre-defined as a pre-heating program and should be executed at the beginning of each working day. This program ensures that the firing chamber is heated homogeneously to a uniform temperature and removes any condensation inside.

0.5 Use within specifications

Caution

Read manual before using

The **VARIO PRESS®** 300 **/ VARIO** 300 furnace series was exclusively designed for firing and/or pressing dental ceramics.

The user is liable for all damages resulting from usage other than that specified by the manufacturer.

At temperatures above 1075°C/1967°F, the working life of the heating muffle is reduced.

In case of defect of the furnace, the stated warranty will apply provided that use conforms to the specifications within this manual.

Repairs and maintenance may only be performed by our authorized Customer Care Center.

Do not touch the screen with wet fingers. Never use hard or sharp objects to operate the touch screen.

Soldering inside the oven will negate the warranty.

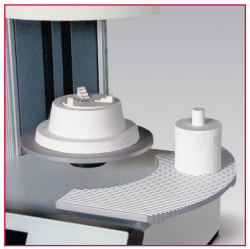
- Please unpack the oven with caution. The oven should always be carried by two persons. Always lift the device at the bottom, never at the furnace chamber or table slide bar.
- The oven must always have a firing or pressing brick on the lift table.
- A furnace with a pressing function must **always** be conneced to compressed air, even during normal vacuum firing, so the pressing plunger remains “up” in its starting position.

- During operation never place your hand between the lift table and the furnace chamber. There is a risk of pinching your hand and a burn hazard.

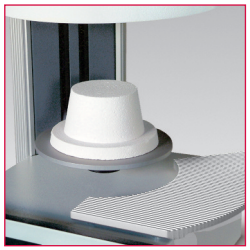
- During operation never place your hand under the furnace table and do not put an investment ring or other objects under the lift table.

  Do not block the lift table during the opening process.

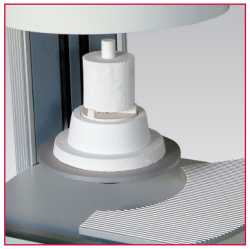
  There is a risk of pinching your hand.



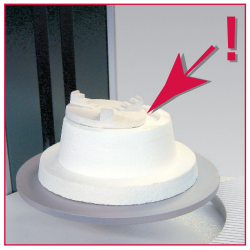
- Use the special cooling grid to cool the investment ring after a pressing process.



- For firing porcelain, use only the firing tray.



- For pressing, use only the pressing tray with the insert.



- The insert must be correctly positioned in the pressing tray.

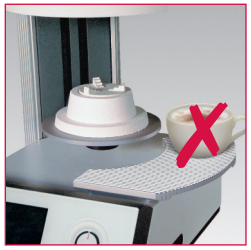
Conflict

0.6 Notes for your Safety

- Slide stop at the side of the furnace always closed.
- The oven must be turned off before removing or inserting the USB stick.

- The air vents must be kept free from obstruction and clean at all times to allow proper air circulation. If this is not done, there is a risk of overheating the furnace.

Conflict

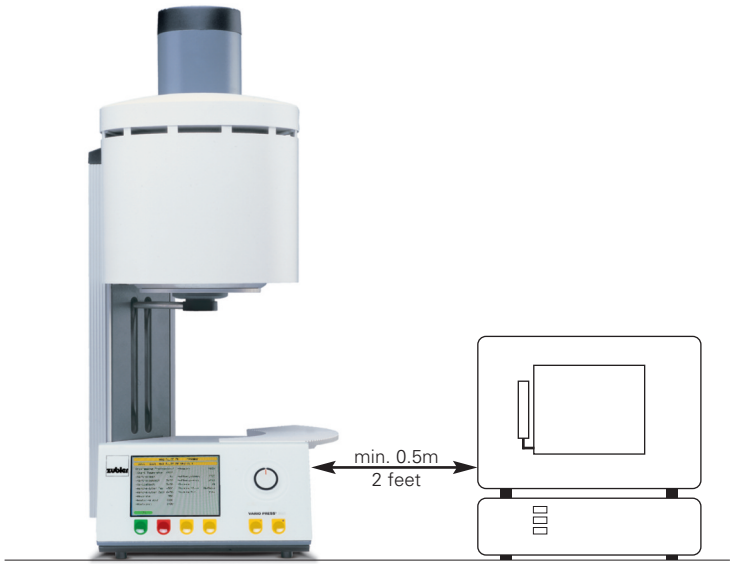


- Make sure that no liquids or other foreign objects enter the furnace or the air vents, as this may result in an electrical shock.

Conflict

- The lift of the furnace has an electrical lift drive and has to be operated by the "Open" and "Close" Keys. Do not open or close the lift manually.

- Use this furnace only for its intended purpose as described in this Owner's Manual and carefully remove all packing materials and tape during installation.
- The furnace may only be used indoors.
- Materials developing harmful gases must not be processed in this furnace.
- This furnace must be plugged into the proper grounded circuit. If you have questions regarding the proper circuit, contact a licensed electrician.
- Any disruption of the protective conductor, either inside or outside the furnace, or any loosening of the protective conductor connection may lead to danger for the user in case of a malfunction.
- After any extended period without use as well as high humidity or low temperatures, it may not be possible to generate a sufficient vacuum initially. This is normal.
- Leave at least 8" – 12" of free space around and above the unit. Adjacent structures surrounding the unit should be non-flammable and the area should be well-ventilated.
- Follow fire department guidelines, always store a multi-purpose dry chemical fire extinguisher in your laboratory in proximity to the furnace and ensure that your employees have been properly trained in its use.
- Never wear loose fitting or hanging garments while using this furnace. Be careful when reaching for items stored around the furnace. Flammable material could be ignited if brought into contact with any of the unit's hot surfaces and may cause severe burns.
- Any potentially flammable materials, such as (but not limited to) paper, brushes, alcohol, sprays and solvents, should not be used or even stored next to the furnace and no materials should ever be placed on top of the unit.
- Do not set the furnace or vacuum pump next to uninsulated heat sources. (e.g. Other furnaces or ovens)
- Soldering in this furnace will considerably reduce the life of the thermocouple and muffle and will void the warranty.



- Be sure that the furnace is properly installed per our instructions and that the selected electrical outlet is properly grounded.
- The electrical service provided must be a dedicated line of the proper size according to local electrical codes. Consult a qualified electrician to ensure that your amperage is sufficient to prevent burdening of any existing circuit.
- Do not use an extension cord with the furnace. Check with your utility provider for electrical codes, which apply in your area.
- In case of undervoltage, the temperature increase may be delayed.
- Compressed air systems must meet the listed requirements for use with the unit. Connections should be made by qualified personnel and all fittings attached and used in accordance with manufacturer's instructions.
- Hoses and connections should be checked periodically for fit, wear and damage and replaced or tightened, as needed.
- All cords and hoses should be located away from walkways and aisles.
- During certain operations, such as high-temperature soak or when the chamber is opened after firing, high temperature convection currents are created.
- Do not touch the surface of the heating chamber, the heating elements or the interior surface of the heating chamber. These surfaces may cause severe burns.
- Always keep the chamber closed with the lift in the up position between processes or when the unit is not in use.
- If the furnace is under vacuum in the "Off" state for an extended period of time, the O-ring of the lift plate may adhere slightly.
- Clean the furnace with a dry or slightly damp cloth. Do not use any solvents. Always disconnect power before cleaning.
- When heating the firing chamber, there may be vibration noises from the heating elements, this is normal.
- In the case of faults or damages that prevent safe operation, the equipment should not be used, until the problem is resolved or repaired.
- Turn off the furnace, disconnect the power cord and wait for the furnace to cool to room temperature before performing any recommended and authorized routine maintenance or service, due to the risk of electrical shock, personal injury or death.
- Do not attempt to repair, replace or open any part of your furnace, unless you have read the manual and the repair or replacement is specifically recommended therein. Any unauthorized attempt to repair, replace or open any part of your furnace could present a safety hazard and void your warranty. All other servicing, either in-warranty or out-of-warranty, should be referred to our Customer Care Center.

- In case of a service, use only original spare parts.
- Unauthorized changes or modifications to hardware or software can create severe safety hazards, as well as terminate your warranty.
- Children and untrained visitors should never be left alone or unattended in the area where a furnace is in use. They should never be allowed to climb or stand on any surface, where the furnace is situated and being operated from. Items of interest to children should not be stored in and around the furnace. Children climbing on and around the surface where furnace operates could be seriously injured.
- **Do not discard the original packaging materials and shipping carton of your VARIO furnace.**

  When transporting the furnace, use the original packaging, otherwise you could negate some of your rights under the warranty for failure to transport and/or return your unit in the original packaging.

Muffle Dust Exposure

This furnace contains respirable refractory ceramic fibers (RCF) and crystalline silica in its thermal muffle insulation. These materials may be in the form of fiber blanket or felt, vacuum formed board or shapes, mineral wool slab or loose fill fiber.

- Normal use of the furnace does not result in any significant level of airborne dust from these materials. However, when it becomes necessary to replace the muffle, the person doing this maintenance and repair work may be exposed to much higher levels.
- Given conflicting evidence of any long term health hazards, we must recommend that safety precautions are taken whenever the materials are handled by authorized repair personnel.
- Exposure to dust from fiber which has been used at high temperatures may cause respiratory disease. When handling fiber always use an OSHA or NIOSH approved and HEPA filtered respirator, eye protection, gloves and long sleeved clothing.
- Avoid breaking up waste material.

  Dispose of fiber waste in sealed containers.
- After handling, rinse exposed skin with water before washing gently with soap (not detergent). Wash work clothing separately.
- Because this product and many similar products on the market today contain crystalline silica and ceramic fibers, it is necessary under the statutes of California Proposition 65 that the following statement be included:

  "This product contains substances known to the State of California to cause cancer. Material Safety Data Sheets for RCF materials supplied upon request."

1. Main menu

Selection of menu parameters

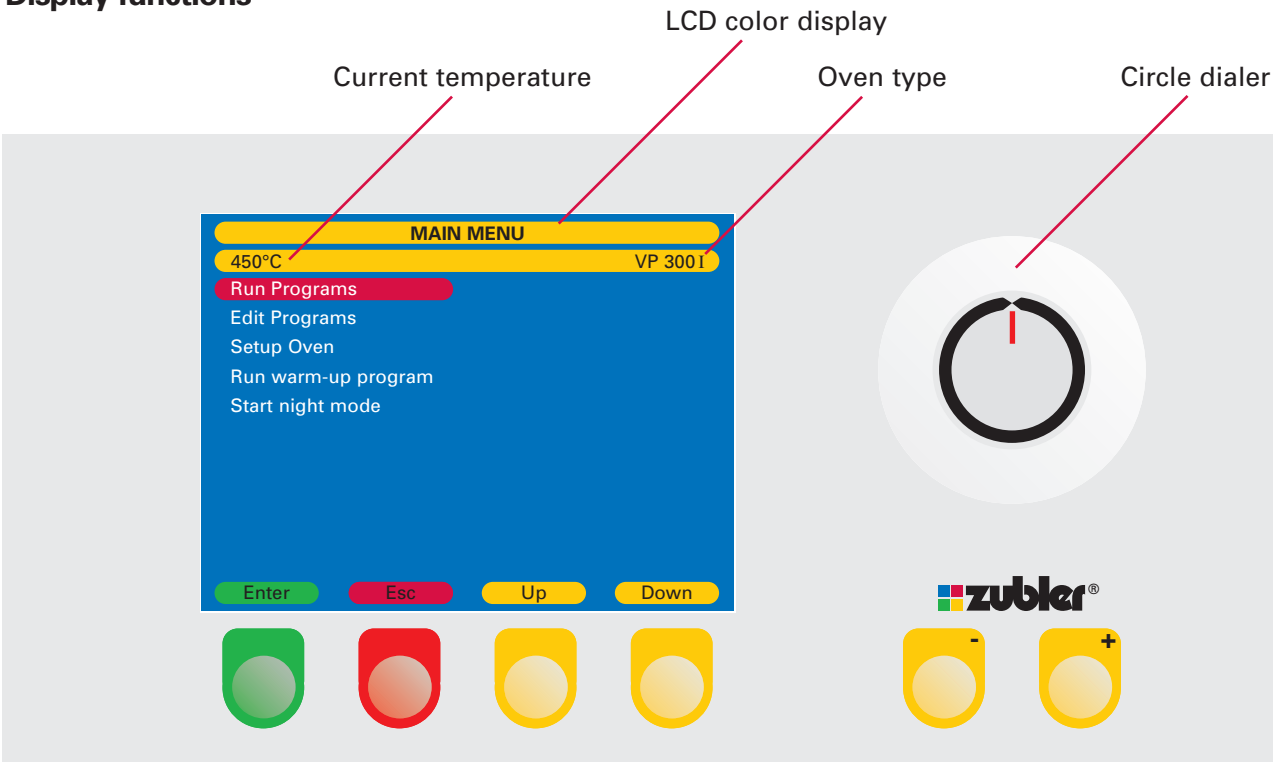
❶ Once you have switched on the oven, the Main Menu will appear on the display with the following five items:

1.1	Run programs
1.2	Edit programs
1.3	Setup oven
1.4	Run warm-up program
1.5	Start night mode

❷ Please select your desired menu parameters using the dialer or the +/- keys

❸ Confirm your selection with the green "Enter" key

Display functions



Section for selecting parameters
Confirm / cancel key
Lift movement Up/Down

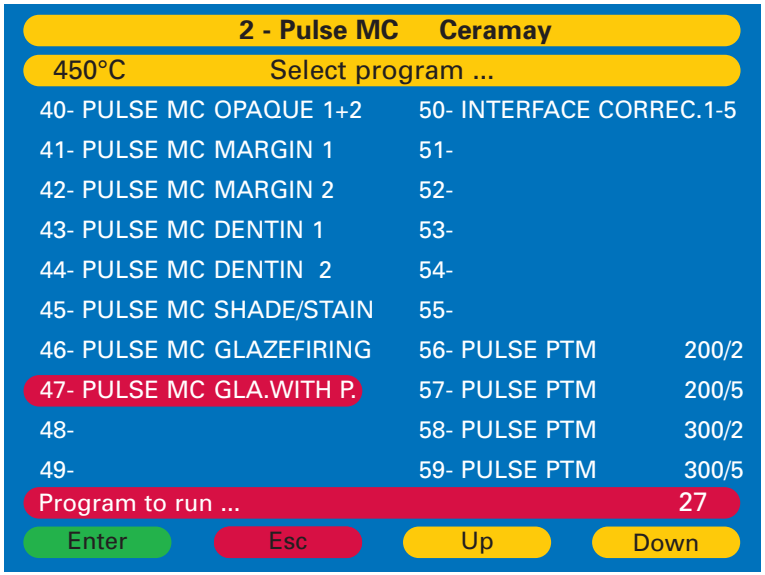
Section for changing values
Rapid selection (circle dialer)
Step by step (yellow keys)

1. Main menu

1.1 Run Programs

Program start

- After selecting "Run Program" from the Main Menu and confirming this selection with the green “Enter” key.
- The Program Group is displayed. The most recently activated program will be highlighted. 19 other programs addresses will also be displayed.
- Each of the 500 programs (=25 brands with 20 programs each) can be easily edited.
- Depending on the ceramics or technique used, it is always recommended to allocate a complete block to one brand or technique.
- Use the dialer or +/- keys to highlight the program you wish to run. Touch the green “Enter” key to activate the program.
- To switch to another program group, press the red "Esc" key and return to the brand page (see page 15, “working with the brand page”)
- The operator using the furnace must close the lift after completing the firing or pressing program.
- After closing the lift, the unit will remain at the programmed idle temperature for four hours. If the unit is not used, it will automatically go into the stand-by mode.



Caution:

Close the furnace after completing a firing or pressing!!!

- If, at the end of the program, the chamber is not manually closed, the device will automatically cool down to the safety temperature of 400°C, independent of the idle temperature selected. Once this temperature has been reached, the device will remain in this state for 30 minutes.

  At the end of this time, the device will enter stand-by mode and close automatically after the defined stand-by temperature of 100°C has been reached.

Overwriting a program during operation

Should you find that you have to temporarily change one or more parameters while a program is running, you can do this by pressing the yellow "Edit Prog." key below the display.

In general, you can only change parameters that have not already been started when you press the key.

By pressing the "Edit" key, you activate the edit mode. You can now change all the parameters not yet processed in the sequence of programs at the time of modification, with regard to this individual firing.

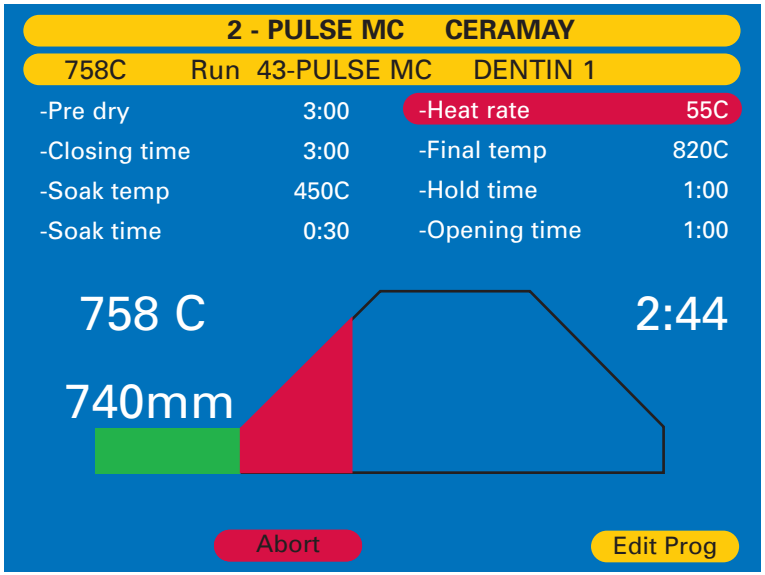
For this purpose there appears in the display a red bar with the first modifiable parameter. To adjust use the dialer or +/- buttons.

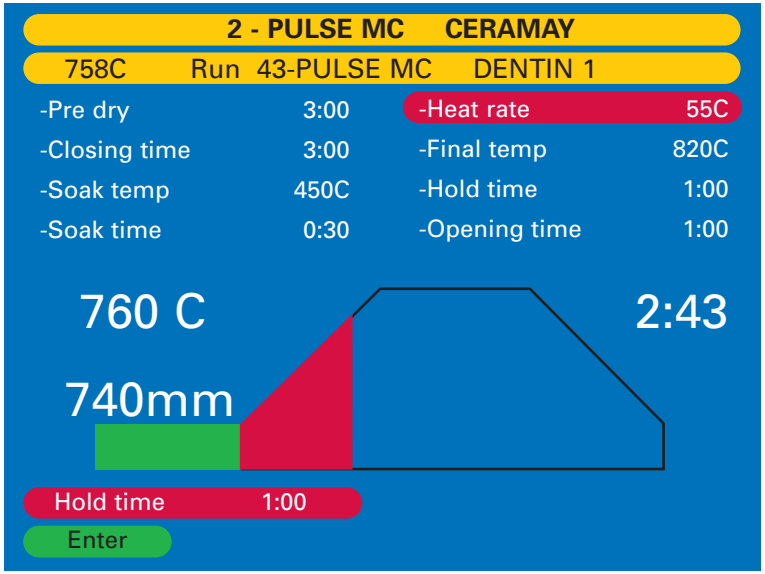
Now confirm the changes with the green "Enter" key to get to the next parameter.

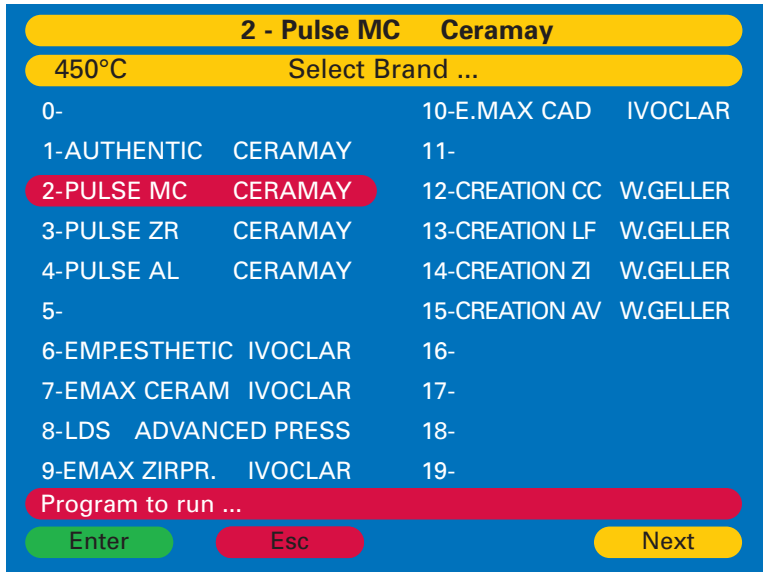
The program sequence will be shown in its usual form on the display.

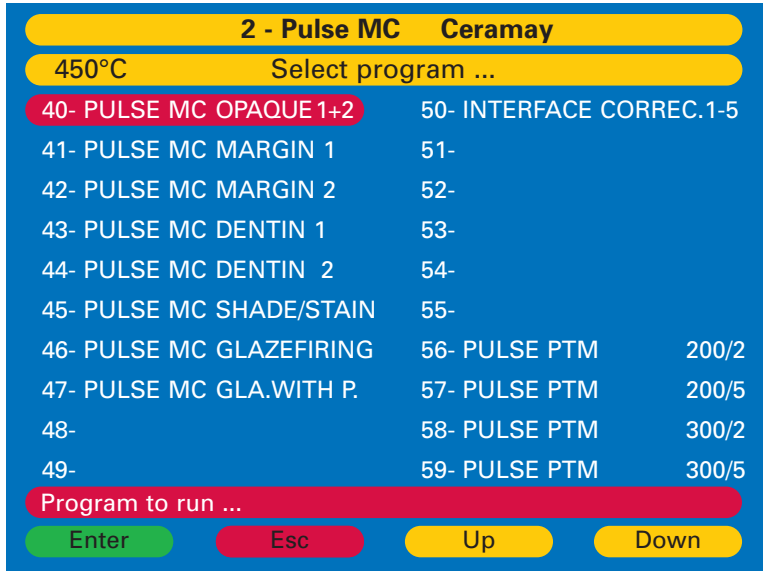
The changes you have made are temporary and apply only to the current firing cycle.

Editing can be carried out only once per firing cycle.









Working with the brand Page

- In the index, programs can be selected in groups (see 1.2.6 page 25)
- To navigate away from the most recently run program to another program in a different brand group, leave the page by pressing the red "Esc" key.
- The first of two program index pages (0–19) will open.
- Use the dialer or the +/– keys to move the red cursor to the selected brand and confirm by pressing The green “Enter” key.

- The page containing the programs of the brand will be displayed
- Continue as described under 1.1, “Run programs”.

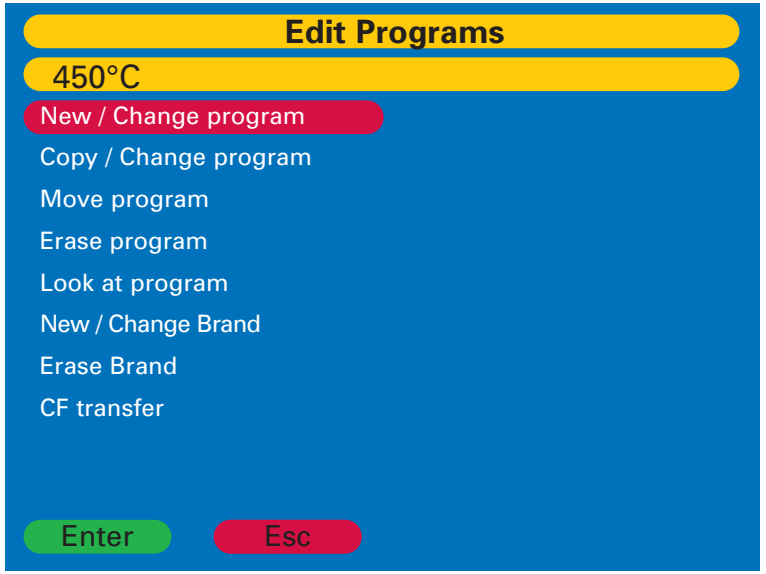
* The Advanced Press Programs for lithium disilicate are only available with the **VARIO PRESS** 300**.e** or as an upgrade for the Vario Press 300.

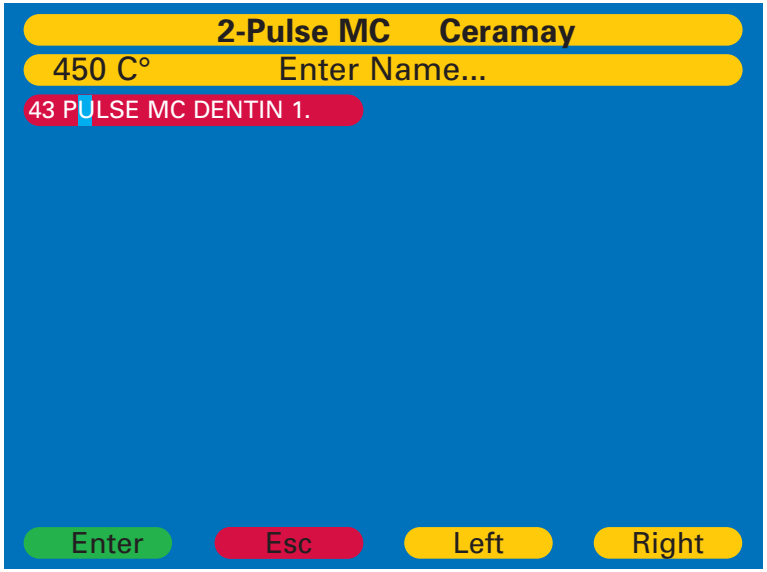
1.2 Edit Program

1.2.1 New/change program

- After selecting "Edit Programs" from the Main Menu and confirming this selection by pressing the green “Enter” key.
- “New/Change program” appears in the next window. Confirm this by pressing the green “Enter” key. You will then arrive at the brand page.
- Select a brand and confirm by pressing the green “Enter” key.
- Select the program name or program number of which you wish to create or change and confirm this by pressing the green “Enter” key.
- The first letter to be changed is highlighted in blue.
- Select the desired letters or figure with the dialer or the +/- keys and confirm by pressing the “Right” key.
- The cursor will move one position to the right.
- Continue as previously described until you have entered the desired name.
- Use the “left” or “right” keys to move the cursor to another character.
- You cannot store a program name already stored in the memory.
- Press the green "Enter" Key to save the name and begin editing the program parameters.
- If you wish to change only the name of a program, press the green “Enter” key to save it and then the “Last line” key. Select the “Yes” option in the active “Save” field and confirm this by pressing the green “Enter” key.
- If you fail to select the save option in the active “Save” field prior to pressing the green “Enter” key, you will loose your input data.

  Remember to select the save option.





Changing the firing parameters

You can select the program type in the first line:

❶ **Professional** program: individual firing management with 16 programmable parameters for processing all dental ceramic materials perfectly.

❷ **Standard** program: a standard firing management in accordance with the guidelines for the dental ceramics available on the market.

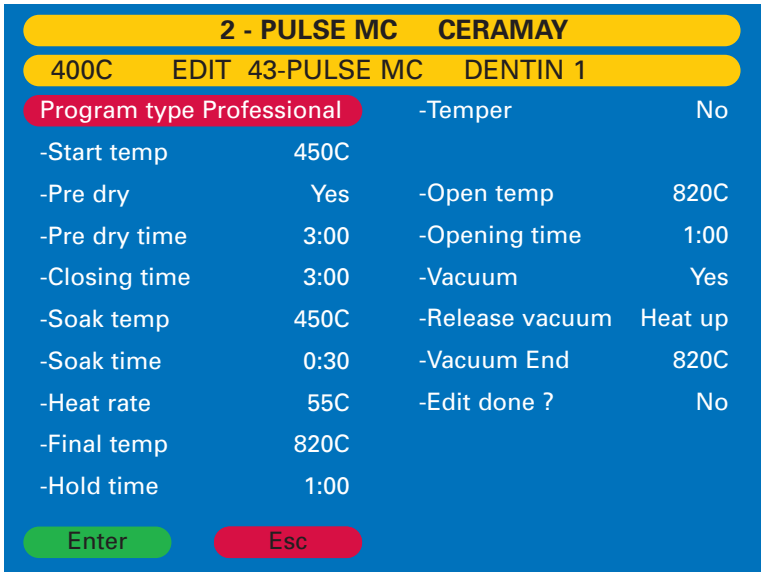
❸ **Special** program: this firing program is recommended for processing ceramic materials, which require two holding times under vacuum and/or two different heat rates. (specially for crystallization programs).

❹ **I-Press** program: Intelligent mode for processing all pressable ceramics for producing all ceramic restorations and press-to-metal® technique.

The press time is automatically determined via the intelligent I-Press sensor system.

❺ **Press** program: The traditional timed Press mode for processing pressable ceramics.

❻ **Sinter** program: Used for sintering alumina framework ceramics (such as Vita® InCeram*). This program will be made available by the manufacturer only on special request.



We recommend the Professional program for all firing tasks. Perfect pre-drying and uniform heating ensure excellent firing results.

We recommend the I-Press program for all pressing tasks. The I-Press function optimizes pressing results.

VITA In-Ceram® is a registered Trademark of Vita Zahnfabrik H.Rauter GmbH & Co.KG

❶ The Professional Program

Start temperature	Temperature in the firing chamber at which the program starts.	
Pre-dry	Selecting "YES" activates the special pre-drying program.	
Pre-dry time	Enter a time. In this section, the lift identifies a predefined position for the entire time, depending on the heat radiated by the firing chamber. The object can thus be pre-dried at a constant temperature.	
Closing time	Time in which the lift moves in 10 increments into the firing chamber.	
Soak temperature	At this temperature the object remains in the closed firing chamber in order to achieve an even temperature distribution. Soak temperature = Vacuum start	
Soak time	States the retention period of the object in the firing chamber before evacuation and the temperature increase.	
Heat rate	Temperature increase per minute in order to reach the final temperature.	
Final temperature	Temperature at which the ceramic is sintered.	
Hold time	Period for which the ceramic is maintained at the final temperature.	
Temper	Selecting "YES" activates the special tempering program.	
Temper temperature	Temperature at which the ceramic is tempered, i.e. subjected to precise thermal treatment at a constant temperature.	
Temper time	States the duration of the thermal treatment in the firing chamber when closed.	
Open temperature	Temperature at which the device opens the firing chamber.	
Opening time	Decent time of the lift from the chamber to the fully open position.	
Vacuum	Selecting "YES" activates the vacuum parameter (firing under vacuum).	
Vacuum release	During the heating up stage	→ release Vacuum Heat up
	During the hold time at final temperature	→ release Vacuum Hold time
	During the cooling stage	→ release Vacuum Cooling
Vacuum end	Displays the temperature or time at which the vacuum is released.	
Edit done?	Saving of the program.	

❷ The Standard Program

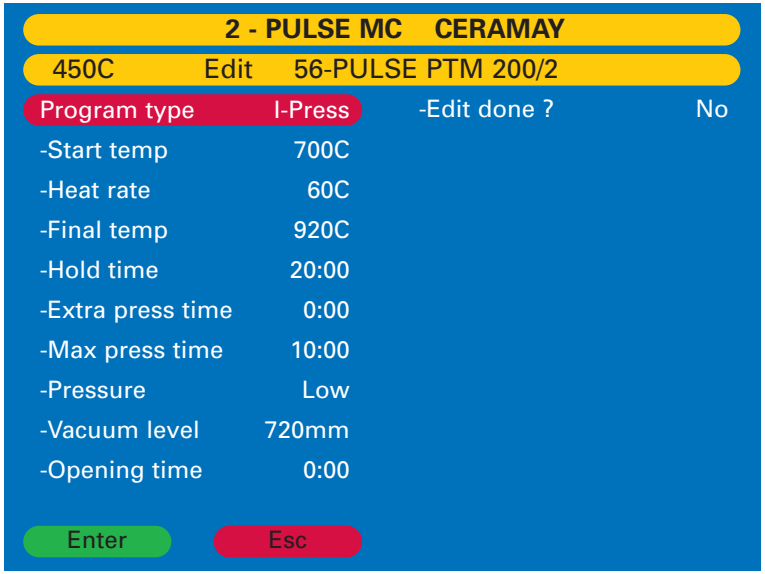
Start temperature	Temperature in the firing chamber at which the program starts.
Pre-dry	Selecting “YES” activates the special pre-drying program.
Pre-dry time	Enter a time. In this section, the lift identifies a predefined position for the entire time, depending on the heat radiated by the firing chamber. The object can thus be pre-dried at a constant temperature.
Closing time	Time in which the lift moves in 10 increments into the firing chamber.
Heat rate	Temperature increase per minute in order to reach the final temperature.
Final temperature	Temperature at which the ceramic is sintered.
Hold time	Period for which the ceramic is maintained at the final temperature.
Opening time	Decent time of the lift from the chamber to the fully open position.
Vacuum	Selecting “YES” activates the vacuum parameter (firing under vacuum).
Vacuum start	Temperature at which the vacuum pump begins to evacuate the firing chamber.
Vacuum end	Temperature at which the vacuum release occurs.
Edit done?	Saving of the program.

❸ The Special Program (Firing Program with two heeting rates, e.g. crystallization for IPS e.max®CAD)

Start temperature	Temperature in the firing chamber at which the program starts.
Pre-dry	Selecting “YES” activates the special pre-drying program.
Pre-dry time	Enter a time. In this section, the lift identifies a predefined position for the entire time, depending on the heat radiated by the firing chamber. The object can thus be pre-dried at a constant temperature.
Closing time	Time in which the lift moves in 10 increments into the firing chamber.
Soak temperature	At this temperature, the object remains in the closed firing chamber in order to achieve an even temperature distribution.
Soak time	States the retention period of the object in the firing chamber before evacuation and the temperature increase.
Heat rate 1	Temperature increase per minute in order to reach the final temperature 1.
Final temperature 1	Temperature 1 at which the ceramic is sintered.
Hold time 1	Period for which the ceramic is maintained at the final temperature 1.
Heat rate 2	Temperature increase per minute in order to reach the final temperature 2.
Final temperature 2	Temperature 2 at which the ceramic is sintered.
Hold time 2	Period for which the ceramic is maintained at the final temperature 2.
Open temperature	Temperature at which the device opens the firing chamber.
Opening time	Decent time of the lift from the chamber to the fully open position.
Vacuum	Selecting “YES” activates the vacuum parameter (firing under vacuum).
Vacuum release	During the heating up stage → release Vacuum Heat up During the hold time at final temperature → release Vacuum Hold time During the cooling stage → release Vacuum Cooling
Vacuum end	Display shows temperature at which the vacuum is released.
Edit done?	Saving of the program.

❹ The I-Press Program

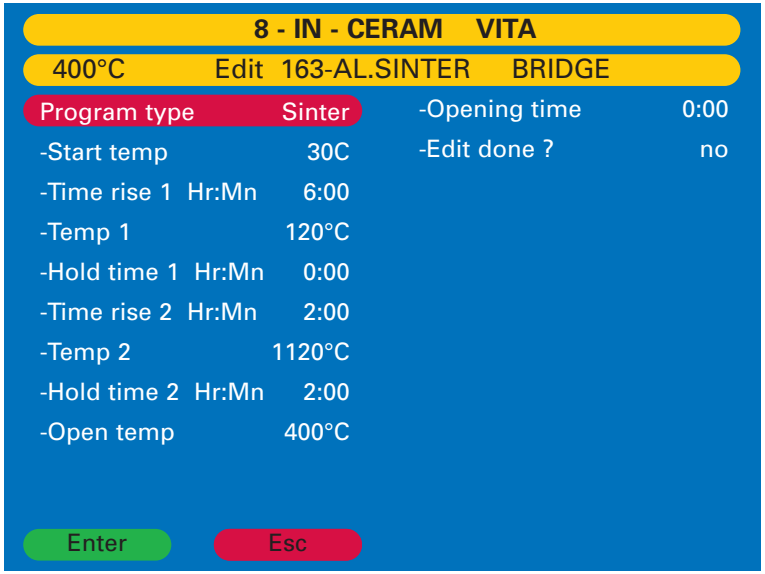
Start temperature	Temperature in the firing chamber at which the program starts.
Heating rate	Temperature increase per minute in order to reach the final temperature.
Final temperature	Temperature at which the ceramic is pressed in the ring.
Hold time	Period during which the ring is maintained at final temperature before pressing.
Extra press time	Additional press time after there has been no movement at the end of the I-Press Process.
Max. Press time	Is the maximum press time desired. Once this time is reached, the press process will stop, independent of the sensor.
Pressure	Select between low and high pressure (2 g pellets = low, 5 g pellets = high pressure 300g ring only).
Vacuum level	Level of vacuum during the pressing program.
Opening time	Decent time of the lift from the chamber to the fully open position.
Edit done	Saving of the program.



We always recommend using the I-Press program for pressable ceramics.

❻ Sintering Program (Contact dealer to enable sinter programs)

Start temperature	Temperature in the firing chamber at which the program starts.
Timerise 1	The first temperature increase (entered as hours and minutes)
Temp. 1	Temperature at the end of ramp-up time 1
Hold time 1	Time for which the object is maintained at final temperature 1 (entered as hours and minutes)
Timerise 2	The second temperature increase (entered as hours and minutes)
Temp. 2	Temperature at the end of ramp-up time 2
Hold time 2	Time for which the object is maintained at final temperature 2 (entered as hours and minutes)
Open temp.	Temperature at which the device opens the firing chamber
Opening time	Decent time of the lift from the chamber to the fully open position.
Edit done?	Saving of the program



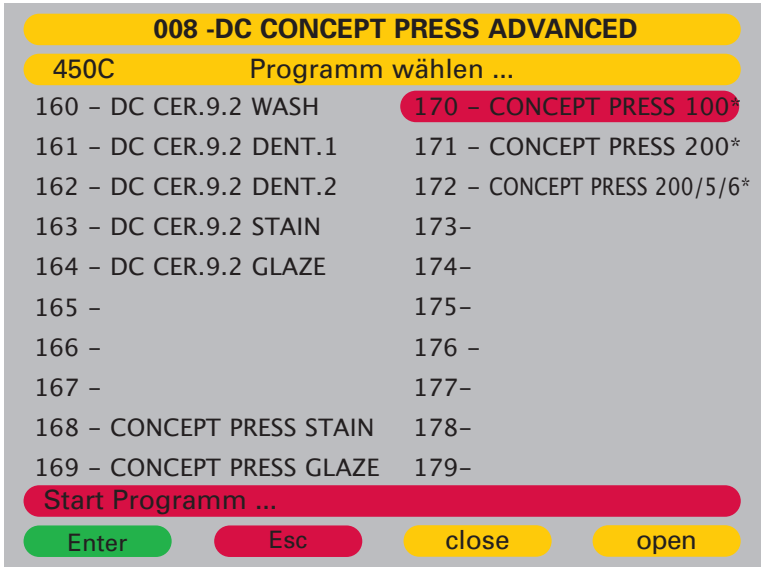
Das Advanced Press Programm für Lithium Disilikat Presskeramik

Advanced Press wurde im Jahr 2010 patentiert und enthält eine völlig neue Programmführung im Pressverfahren speziell für Lithium Disilikat Presskeramiken. Basierend auf der mathematischen Berechnung des thermischen Verhaltens der am Presszyklus beteiligten Werkstoffe ergibt sich eine Vorwärmkurve, die sich von der klassischen Methode des Aufheizens einer Pressmuffel erheblich unterscheidet (siehe Graphik).

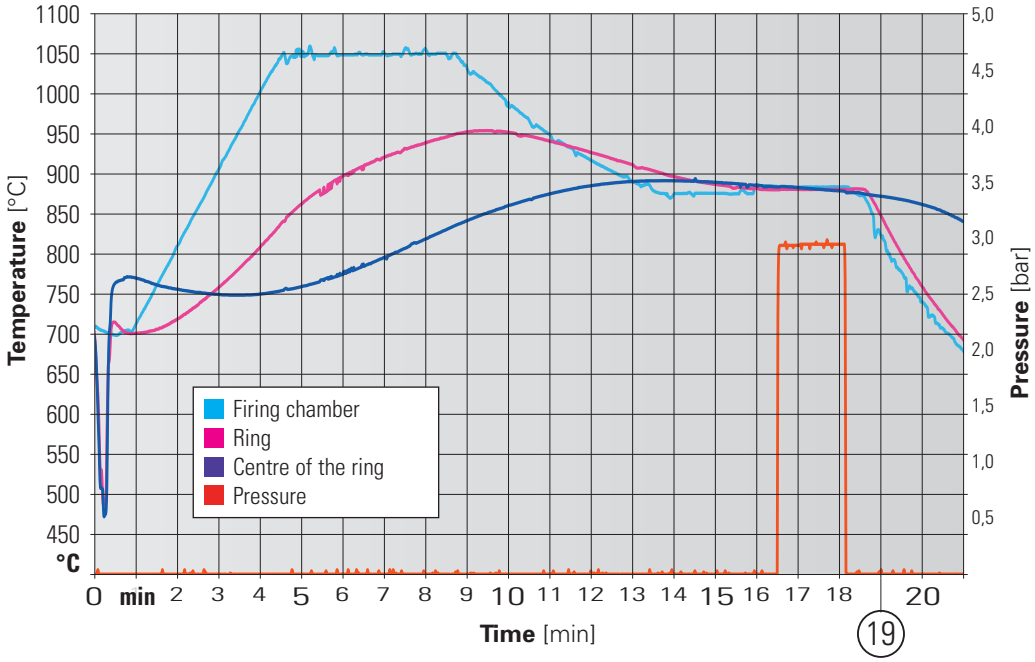
Dabei wird die Muffel kurzzeitig mit mehr Energie versorgt, ihr äußerer Teil heizt sich ihr äußerer Teil stärker auf als die vorgegebene Verarbeitungstemperatur der Keramik. Diese befindet sich in einer „kälteren" Zone im Zentrum der Pressmuffel. Nach einer exakt berechneten Zeit der Energiezufuhr schaltet die Heizung des Ofens ab und es beginnt der Wärmeaustausch in Richtung Zentrum. Im Moment der absoluten Wärmehomogeneität im gesamten Muffelbereich beginnt der Ofen seinen Pressprozess.

Dieser patentierter Prozess führt zu extrem kurzen Presszeiten und somit zu wesentlich geringerer Reaktionsschicht bei Lithium Disilikat Presskeramiken.

Der mathematisch ausgearbeitete Pressprozess erlaubt keinen Eingriff in die Daten der einzelnen Parameter. Sollten zum Erreichen eines perfekten Ergebnisses Korrekturen im Pressprozess erforderlich sein, wenden Sie sich in diesem Fall bitte an unseren technischen Support.



Temperaturverlauf LDS Advanced Press



1.2.2 Copy/change program

- Copy from: select the program to be copied using the dialer or the +/- keys.
- By pressing the green “Enter” key, you can confirm the program selected for duplication.
- You now return to the brand page. Select the brand and confirm by pressing the green “Enter” key.
- Select the place to which the program is to be copied using the dialer or the +/- keys.
- Fix the program at its new position by pressing the green “Enter” key.
- You may now change the name and program parameters, as described on 1.2 of Page 16.

  The name must be changed. Duplicate program names are not allowed.
- If programs are not moved or copied to an empty position, the existing program will be replaced.

1.2.3 Move program

- Move from: Select the program to be moved using the dialer or the +/- keys.
- Press the green "Enter" key to confirm the selection.
- You now return to the brand page. Select the brand to which the program is to be moved using the dialer or the +/- keys and press the green “Enter” key.
- Select the place to which the program is to be moved using the dialer or the +/- keys and press the green “Enter” key.
- Press the red “Esc” key to return to the edit mode.
- If programs are not moved or copied to an empty position, the existing program will be replaced.

1.2.4 Erase program

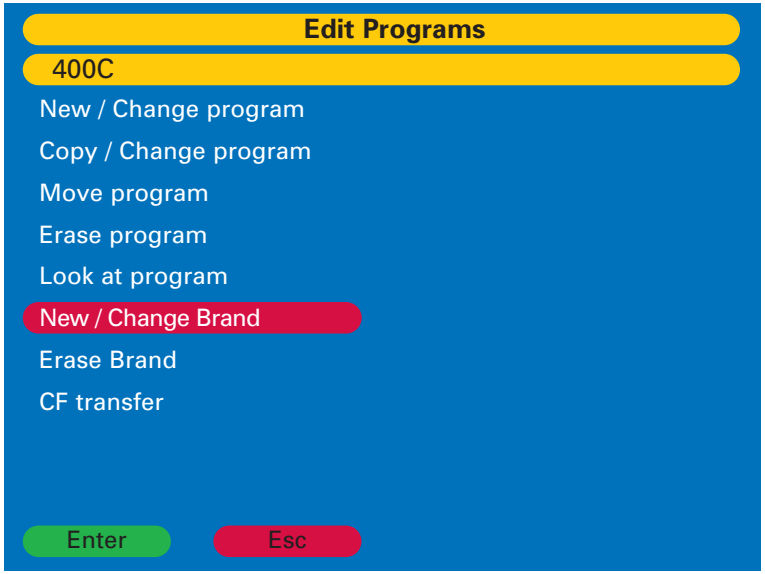
- Within a program group, select the program to be deleted by using the dialer or the +/- keys.
- Press the green “Enter” key, to confirm the program selected for deletion.
- The program is displayed with all its parameters together with the question: “Delete program?”
- Confirm the deletion by pressing the “yes” key.
- Now press the red “Esc” key to return to the input mode.

1.2.5 Look at program

- Within a program group (brand) select a program using the dialer or the +/- keys.
- Confirm the selected program by pressing the green “Enter” key.
- The individual parameters are shown on the display, but cannot be changed.
- Press the “OK” key to return to the “Look at” mode.

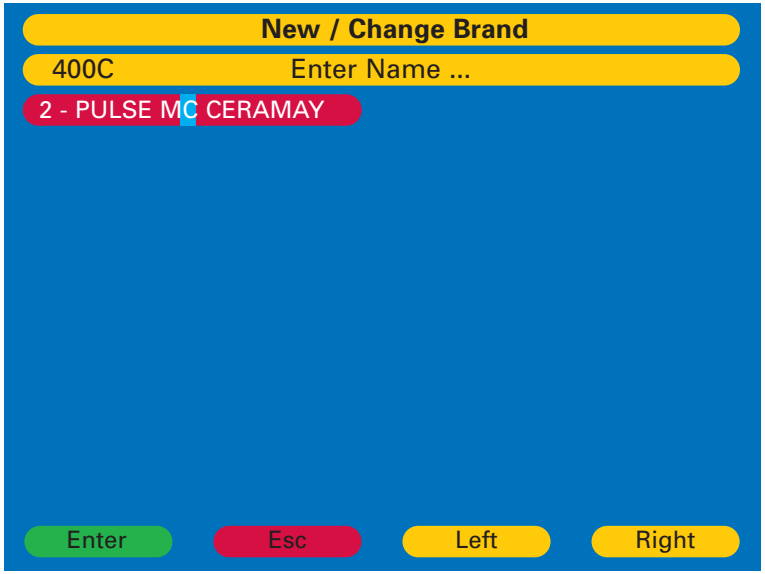
1.2.6 Brand page New/Change

The brand page facilitates access to any firing or pressing program you select. Each brand contains a block of 20 programs, that can be freely defined by the user. In the brand page, these 20 programs are combined to form a single group. This feature will give you 25 brands numbered 0 to 24 with 20 firing or pressing programs each.



Setting up the brand page

- In the “Edit programs” mode, select “New / Change Brand”, and confirm by pressing the green “Enter” key. The brand page with the first 20 brands will appear on the display.
- Move the red selection bar to the brand you wish to edit and confirm by pressing the green “Enter” key.
- You can now enter a name in the corresponding field, which will be displayed on the brand page.
- The first letter to be changed is highlighted in blue.
- Use the dialer or the +/- keys to select the desired letter or number and confirm by pressing the “Right” key.



- The curser moves one position to the right.
- Repeat the two previous steps until the desired name is entered. Press the green “Enter” key.
- Press the red "Esc" button to return to the “Edit Programs” screen.
- Press the red "Esc" key to return to the Main Menu.

1.2.7 Erase brand

- Use the dialer or the +/- keys to select the brand name to be erased and confirm by pressing the green "Enter" key. Then a security query appears which you can confirm by pressing the green "Enter" key or cancel by pressing red “Esc” key.

1.2.8 USB - transfer

For loading or storing programs on the USB, you need a USB flash drive with USB Microsoft protocol and a folder named, "VARIO".

- In the "Edit Programs" Menu select USB-Transfer using the + / -keys or the dialer and confirm with the green "Enter" key.

"Send Progs to USB"

- Select „Send Progs to USB" using the + / -keys or the dialer and confirm by pressing the green "Enter" key.
- Use the + / -keys or the dialer to select the desired letter or number
- Use the yellow "left" or "right" buttons to move the cursor one position to the left or right.
- Touch the green "Enter" key, to store the programs on the USB flash drive. When the transfer is complete the display will return to the "Edit Programs" menu.

"Load Programs from USB "

- Select "Load Programs from USB" using the + / -keys or the dialer and confirm by pressing the green "Enter" key.
- Select the program file you want to load from the USB, using the + / -keys or the dialer and confirm by pressing the green "Enter" key. When the transfer is complete the display will return to the "Edit Programs" menu.

1.3 Set-up oven

User can enter their individual requirements here. The following table depicts the individual settings, together with their impact on the function of the ceramic furnace.

1.3.1 Idle temperature

This is a temperature reached by the furnace following the conclusion of a firing program. During normal operation, this temperature is entered as the start temperature for individual firing cycles.
(see 0.3,"Setting up the furnace", on page 6)

1.3.2 Night mode temperature

This value displays the temperature maintained by the furnace during night mode (see section 1.5 page 28 "start night mode").
We recommend setting the temperature to 100°C to avoid accumulation of moisture in the muffle.

1.3.3 Customize calibration

This allows the user to adjust the calibration within certain temperature ranges. This feature changes all the final temperatures of programs in the respective temperature ranges (pressing below/above 1000°C, firing porcelain below/above 800°C).

1.3.4 Vacuum pump

This section determines whether the pump is maintained in continuous operation, or is switched off when the required vacuum level has been reached.

(see 0.4,"Basic Settings", on page 6)

1.3.5 Vacuum level

In this section, you can set the vacuum level for the programs.

Run a vacuum test to check for the allowable vacuum level.

(see 0.4,"Basic Settings", on page 6)

1.3.6 Diagnostics/tests

❶ Pre-heat / dry program

This program is run prior to the first operation of the furnace.
(see 0.4,"Basic Settings", on page 6)

❷ Run purge program

Use this high temperature program to remove contaminates and impurities.

Never use ANY purging additives such as carbon (graphite pellets) for cleaning the firing chamber!

Using additives will significantly reduce the life of the thermocouple and heating element.

❸ Software version

Displays the software version currently installed.

❹ Update software

Requires the entry of a password.
We will provide the password and instructions with software updates.

❺ Service tests

- **Vacuum test:** determines the available vacuum for your location and performs a leakage test.
- **Test low pressure** (3.0 bar)
- **Test high pressure** (4.5 bar)
- **Test press sensor:** shows the values for the pressing plunger and its function.
- **Factory tests:** for use by service center.

1.3.7 Customize country

This section sets the language as well as the date, time and units (metric/imperial).

1.3.8 Display

The brightness of the display is set using this function (recommended value: 34).

1.3.9 Audio beeps

Turns audio beeps on/off.

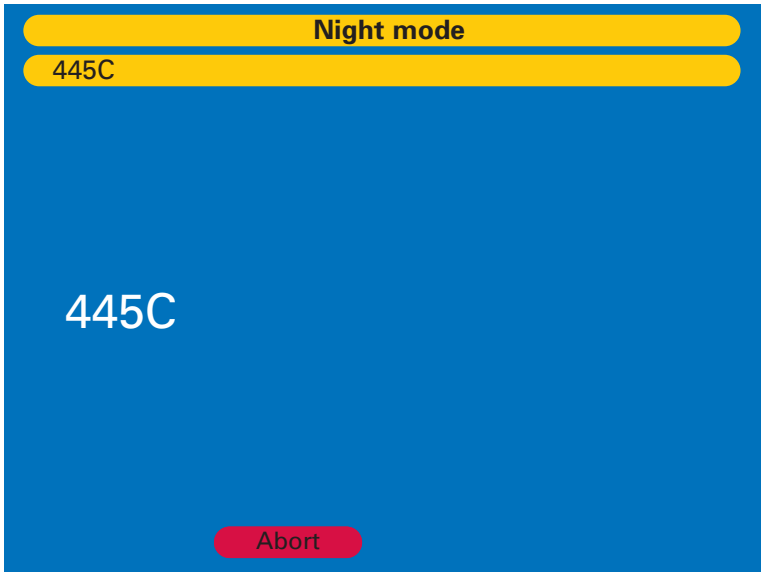
1.4 Run Warm-up program

Before starting work in the morning, activate the "warm-up" program to ensure homogeneous, uniform heating.

1.5 Start “night mode”

Instead of switching the furnace off, use night mode to prevent moisture and contamination from entering the firing chamber while the furnace is not in use.

The “night mode” program is started by pressing the green “Enter” key. If you start the “night mode” program and the oven is open, the oven cools down to the programmed temperature and closes automatically. The program is ended by pressing “abort”.



1.5.1 Stand-by temperature

To save energy and prevent impurities or condensation inside the furnace, we advise you to keep the firing chamber closed when it is not being used.

Should you be prevented from closing the furnace yourself, stand-by is automatically activated 30 minutes after a program has finished and the oven is not closed.

If the oven is closed after the last firing, the idle temp is kept for 4 hours. After 4 hours the oven automatically starts the “stand-by” mode.

Warning recommendation:
The 1st. program initiated after “night mode” should be the warm-up program.

- First you hear an acoustic signal
- The temperature in the firing chamber is lowered to the 100°C stand-by temperature.
- Once stand-by temperature has been reached, the lift closes and remains in a closed position.
- After touching one of the pads, the oven goes back to idle temperature.
- The stand-by temperature is a fixed temperature and cannot be changed.

2.1. Control of the water separator

After having put the furnace into operation, please monitor the container approx. 4 weeks for water separation. Concentrations of water must be drained by loosening the locking screw. Should such concentrations of water occur regularly, the quality of compressed air in your laboratory must be improved by the use of a more powerful air-drying apparatus. With dried compressed air, normally no water separation is to be expected.

2.2. Filter element for compressed air supply

The service life of the filter element for compressed air depends on the quality of the compressed air in your laboratory. The filter element must be exchanged after 2 years at the latest, even if high-quality compressed air is being applied. A dirty filter element can lead to a reduction of the fixed maximum pressure and negatively affect pressing.

Exchange of the filter element:

- separate the pressure-reducing unit from the compressed air supply of the laboratory
- unscrew the water container and clean with damp cloth
- loosen the setscrew of the filter
- pull-off the filter
- insert the new filter, tighten and screw on the water container

Fuses:

VARIO 300 series furnaces require the following fuses: slow blow

	230V - Unit	240V - Unit
F1	10.0A	8.0A
F2	8.0A	6.3A
F3	2.0A	2.5A

2.3. Filter element for vacuum pump P3

The filter element prevents dissolved particles and/or condensation from clogging the vacuum pump.

We recommend you replace this filter element at least every 3 years.

2.4 Purging of the firing chamber

see 1.3.6 ❷ page 27

2.5 Spare parts

Filter for compressed air	501/0084
Filter for vacuum pump	556/072
Pressing tray	898/108
Insert for pressing tray	898/109
Firing tray	898/110
Long tweezers	898/106
Ring forceps	898/4136

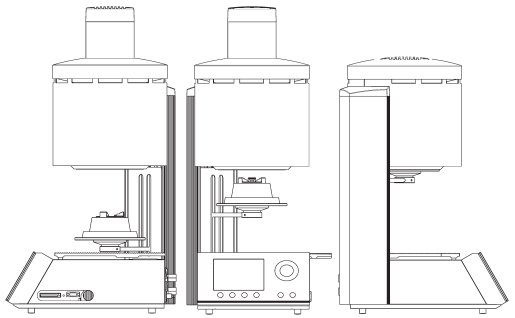
3. Technical Data

		VARIO PRESS® 300	VARIO PRESS® 300	VARIO 300	VARIO 300
Width x depth		360mm x 430mm	360mm x 430mm	360mm x 430mm	360mm x 430mm
Height		765mm	765mm	625mm	625mm
Weight		26kg	26kg	24kg	24kg
Voltage		230V 50Hz/60Hz	240V 50Hz/60Hz	230V 50Hz/60Hz	240V 50Hz/60Hz
Current		7A max. incl. pump	7A max. incl. pump	7A max. incl. pump	7A max. incl. pump
Performance Data:					
Idle temperature		20°C – 700°C	20°C – 700°C	20°C – 700°C	20°C – 700°C
Temperature		20°C – 1200°C	20°C – 1200°C	20°C – 1200°C	20°C – 1200°C
Color display		120mm x 90mm	120mm x 90mm	120mm x 90mm	120mm x 90mm
		320 x 240 dots	320 x 240 dots	320 x 240 dots	320 x 240 dots
Programs		500	500	500	500
Pressing pressure	low	3.0bar	3.0bar	-	-
	high	4.5bar	4.5bar	-	-

	Vacuum pump **P3**	Vacuum pump **P3**
Width x depth	320mmx186mm	320mmx186mm
Height	275mm	275mm
Weight	12kg	12kg
Voltage	230V 50Hz/60Hz	240V 50Hz/60Hz
Current	1,75A	1.75A
Vacuum max.	985mbar	985mbar

Environmental condition

Ambient temperature 18°C - 30°C



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3.1 Scope of supply

VARIO PRESS® 300

1x Power cord
1x Operating system USB
1x Ring tong
1x Firing tray
1x Pressing tray incl. press insert
1x Compressed air hose 2m (blue)
1x Pressure reducer (water strainer) with fixing bracket
1x Long tweezer
1x Inline filter for vacuum hose
1x Vacuum hose
1x Connecting cord cold instrument plug for P3 vacuum pump
1x Warranty cards
1x Operating instructions
1x Spare fuses
1 x Flex Ring System 200g w/12mm base

Accessories:
P3 Vacuum pump

VARIO PRESS® 300.e

1x Power cord
1x Operating system USB
1x Ring tong
1x Firing tray
1x Pressing tray incl. press insert
1x Compressed air hose 2m (blue)
1x Pressure reducer (water strainer) with fixing bracket
1x Long tweezer
1x Inline filter for vacuum hose
1x Vacuum hose
1x Connecting cord cold instrument plug for P3 vacuum pump
1x Warranty cards
1x Operating instructions
1x Spare fuses
1 x Flex Ring System 200g w/12mm base
1 x Flex Ring System 200g w/13mm base

Accessories:
P3 Vacuum pump

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If more help is needed

We hope you will have many years of trouble-free service from your furnace. If you do have problems with the furnace or if you have questions about the furnace not covered in the manual, contact:

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Fax: +49(0)731-145213
Mail: vp300@zubler.de
www.zubler.de

5. Program examples

5.1 Press Programs* *I-Press Program*
I-Press Mode

		Start temperature [°C]	Heat rate [°C/min]	Final temperature [°C]	Hold time [min]	Extra press time [min]	Maximum press time [min]	Pressure	Vacuum level	Opening time [min]
Authentic	**100g ring**	700	60	930	18:00	0:00	10:00	low	710mm	0:00
Authentic	**200g ring**	700	60	940	20:00	0:00	10:00	low	710mm	0:00
Pulse press-to-metal®	**200g ring / 2g Pellet**	700	60	920	20:00	0:00	10:00	low	710mm	0:00 **
Pulse press-to-metal®	**200g ring / 5g Pellet**	700	60	925	20:00	0:00	10:00	low	710mm	0:00 **
Pulse press-to-metal®	**300g ring / 2g Pellet**	700	60	925	25:00	0:00	15:00	low	710mm	0:00 **
Pulse press-to-metal®	**300g ring / 5g Pellet**	700	60	930	25:00	0:00	15:00	high	710mm	0:00 **
Pulse ZR press	**200g ring / 2g Pellet**	700	60	885	20:00	0:00	10:00	low	710mm	0:00
Cergopress	**200g ring**	700	60	980	20:00	0:00	10:00	low	710mm	0:00
Creapress CP	**200g ring**	700	60	1050	20:00	0:00	10:00	low	710mm	0:00
Creapress CP-ZI	**200g ring**	700	60	980	20:00	0:00	12:00	low	710mm	0:00
HeraSunPress	**200g ring**	700	60	1030	20:00	0:00	10:00	low	710mm	0:00
IPS EMPRESS	**200g ring**	700	60	1075	20:00	0:00	10:00	low	710mm	0:00
IPS e.max press LT/MO/HO / 100g ring		700	60	915	15:00	0:00	6:00	low	710mm	0:00
IPS e.max press LT/MO/HO / 200g ring		700	60	920	25:00	0:00	8:00	low	710mm	0:00
IPS e.max press HT	**100g ring**	700	60	910	15:00	0:00	6:00	low	710mm	0:00
IPS e.max press HT	**200g ring**	700	60	915	25:00	0:00	8:00	low	710mm	0:00
Noritake CZR	**200g ring**	700	60	1065	20:00	0:00	8:00	low	710mm	0:00
VITA PM9	**200g ring**	700	60	1000	20:00	0:00	8:00	low	710mm	0:00

*All press programs are only recommendations of the ceramic producer and can be modified individually
** Press-to-metal on non precious alloys can require an opening time of 5 minutes

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5.2 Firing Programs* *Authentic®*

Professional Mode

	Start temperature [°C]	Pre dry	Pre drying time [min]	Closing time [min]	Soak temperature [°C]	Soak time [min]	Heat rate [°C/min]	Final temperature [°C]	Hold time [min]	Temper temperature [°C]	Temper time [min]	Opening temperature [°C]	Opening time [min]	Vacuum	Release vacuum	Vacuum end [°C]
Opa. paste 845°C	450	yes	3:00	3:00	450	0:30	55	845	1:00	--	--	845	0:00	yes	Heat-up	845
Opa. paste 950°C	450	yes	3:00	3:00	450	0:30	55	950	1:00	--	--	950	0:00	yes	Heat-up	950
Margin 1	450	yes	3:00	3:00	450	0:30	45	780	1:00	--	--	780	0:00	yes	Heat-up	780
Margin 2	450	yes	3:00	2:00	450	0:30	45	770	1:00	--	--	770	0:00	yes	Heat-up	770
Dentin 1	450	yes	3:00	2:00	450	0:30	45	760	1:00	--	--	760	1:00	yes	Heat-up	760
Dentin 2	450	yes	3:00	2:00	450	0:30	45	750	1:00	--	--	750	1:00	yes	Heat-up	750
Stain	450	no	-	3:00	450	0:30	45	740	1:00	--	--	740	1:00	yes	Heat-up	740
Glaze without Vac.	450	no	-	3:00	450	0:30	45	745	1:00	--	--	745	1:00	no	--	--
Glaze with Vac.	450	yes	3:00	3:00	450	0:30	45	715	1:00	--	--	715	1:00	yes	Heat-up	715
Correction	450	yes	3:00	3:00	450	0:30	45	710	1:00	--	--	710	1:00	yes	Heat-up	710

*All firing programs are only recommendations of the ceramic producer and can be modified individually
** Refer to the alloy manufacturer's instructions

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5.2 Firing Programs* Pulse® MC / Pulse® MC 3-16

Professional Mode

	Start temperature [°C]	Pre dry	Pre drying time [min]	Closing time [min]	Soak temperature [°C]	Soak time [min]	Heat rate [°C/min]	Final temperature [°C]	Hold time [min]	Temper temperature [°C]	Temper time [min]	Opening temperature [°C]	Opening time [min]	Vacuum	Release vacuum	Vacuum end [°C]
Opaque 1+2	450	yes	3:00	3:00	450	0:30	80	950	1:00	--	--	950	0:00	yes	Heat-up	950
Margin 1	450	yes	3:00	3:00	450	0:30	55	880	1:00	--	--	880	0:00	yes	Heat-up	880
Margin 2	450	yes	3:00	3:00	450	0:30	55	870	1:00	--	--	870	0:00	yes	Heat-up	870
Dentin 1	450	yes	3:00	3:00	450	0:30	55	820	1:00	--	--	820	1:00	yes	Heat-up	820
Dentin 2	450	yes	3:00	3:00	450	0:30	55	810	1:00	--	--	810	1:00	yes	Heat-up	810
Stain	450	yes	3:00	2:00	450	0:30	55	760	1:00	--	--	760	1:00	yes	Heat-up	760
Glaze firing	450	no	--	3:00	450	0:30	55	780	1:00	--	--	780	1:00	no	--	--
Glaze with powder	450	yes	3:00	2:00	450	0:30	55	770	1:00	--	--	770	1:00	no	--	--

*All firing programs are only recommendations of the ceramic producer and can be modified individually
** Refer to the alloy manufacturer's instructions

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5.2 Firing Programs* Pulse® ZR / Pulse® ZR 3-16

Professional Mode

	Start temperature [°C]	Pre dry	Pre drying time [min]	Closing time [min]	Soak temperature [°C]	Soak time [min]	Heat rate [°C/min]	Final temperature [°C]	Hold time [min]	Temper temperature [°C]	Temper time [min]	Opening temperature [°C]	Opening time [min]	Vacuum	Release vacuum	Vacuum end [°C]
Liner	450	yes	2:00	2:00	450	0:30	45	970	1:00	--	--	970	0:00	yes	Heat-up	970
Dentin 1	450	yes	3:00	3:00	450	0:30	45	770	1:00	--	--	770	0:00	yes	Heat-up	770
Dentin 2	450	yes	3:00	2:00	450	0:30	45	760	1:00	--	--	760	0:00	yes	Heat-up	760
Shade/Stain	450	yes	3:00	3:00	450	0:30	45	750	1:00	--	--	750	0:00	yes	Heat-up	750
Glaze firing	450	no	--	3:00	450	0:30	45	740	1:00	--	--	740	0:00	no	--	--
Glaze with powder	450	yes	3:00	3:00	450	0:30	45	740	1:00	--	--	740	0:00	no	--	--

*All firing programs are only recommendations of the ceramic producer and can be modified individually
** Refer to the alloy manufacturer's instructions

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5.2 Firing Programs* Ivoclar InLine

Professional Mode

	Start temperature [°C]	Pre dry	Pre drying time [min]	Closing time [min]	Soak temperature [°C]	Soak time [min]	Heat rate [°C/min]	Final temperature [°C]	Hold time [min]	Temper temperature [°C]	Temper time [min]	Opening temperature [°C]	Opening time [min]	Vacuum	Release vacuum	Vacuum end [°C]
Opaque 1+2	403	yes	3:00	3:00	450	0:30	100	930	2:00	--	--	930	0:00	yes	Heat-up	930
Margin 1+2	403	yes	2:00	2:00	450	0:30	60	930	1:00	--	--	930	0:00	yes	Heat-up	930
Dentin 1	403	yes	2:00	2:00	450	0:30	60	910	1:00	--	--	910	0:00	yes	Heat-up	910
Dentin 2	403	yes	2:00	2:00	450	0:30	60	900	1:00	--	--	900	0:00	yes	Heat-up	900
Margin add-on	403	yes	2:00	2:00	450	0:30	60	900	1:00	--	--	900	0:00	yes	Heat-up	900
Dentin add-on	403	yes	2:00	2:00	450	0:30	60	860	1:00	--	--	860	0:00	yes	Heat-up	860
Stain	403	yes	3:00	3:00	450	0:30	60	800	1:00	--	--	800	0:00	yes	Heat-up	800
Glaze	403	yes	3:00	3:00	450	0:30	60	800	1:00	--	--	800	0:00	yes	Heat-up	800
Finish add-on	403	yes	2:00	2:00	450	0:30	60	690	1:00	--	--	690	0:00	yes	Heat-up	690
Veneer wash	403	yes	2:00	2:00	450	0:30	60	830	1:00	--	--	830	0:00	yes	Heat-up	830
Veneer cervical	403	yes	4:00	4:00	450	0:30	60	940	1:00	--	--	940	0:00	yes	Heat-up	940
Veneer dentin	403	yes	4:00	4:00	450	0:30	60	940	1:00	--	--	940	0:00	yes	Heat-up	940
Veneer incisal	403	yes	4:00	4:00	450	0:30	60	930	1:00	--	--	930	0:00	yes	Heat-up	930
Veneer glaze	403	yes	4:00	4:00	450	0:30	60	860	1:00	--	--	860	0:00	yes	Heat-up	860
POM touch-up	403	yes	2:00	2:00	450	0:30	60	840	1:00	--	--	840	0:00	yes	Heat-up	840

*All firing programs are only recommendations of the ceramic producer and can be modified individually
** Refer to the alloy manufacturer's instructions

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5.2 Firing Programs* Ivoclar e.max ceram

Professional Mode

	Start temperature [°C]	Pre dry	Pre drying time [min]	Closing time [min]	Soak temperature [°C]	Soak time [min]	Heat rate [°C/min]	Final temperature [°C]	Hold time [min]	Temper temperature [°C]	Temper time [min]	Opening temperature [°C]	Opening time [min]	Vacuum	Release vacuum	Vacuum end [°C]
Opaque 1 (Galvano)	403	yes	3:00	3:00	450	0:30	100	940	2:00	--	--	940	0:00	yes	Heat-up	940
Opaque 2 (Galvano)	403	yes	3:00	3:00	450	0:30	100	930	2:00	--	--	930	0:00	yes	Heat-up	930
Zirliner	403	yes	2:00	2:00	450	0:30	60	960	1:00	--	--	960	0:00	yes	Heat-up	960
Wash	403	yes	2:00	2:00	450	0:30	50	750	1:00	--	--	750	0:00	yes	Heat-up	750
Dentin/Incisal 1	403	yes	2:00	2:00	450	0:30	50	750	1:00	--	--	750	0:00	yes	Heat-up	750
Dentin/Incisal 2	403	yes	2:00	2:00	450	0:30	50	750	1:00	--	--	750	0:00	yes	Heat-up	750
Margin 1	403	yes	2:00	2:00	450	0:30	50	800	1:00	--	--	800	0:00	yes	Heat-up	800
Margin 2	403	yes	2:00	2:00	450	0:30	50	800	1:00	--	--	800	0:00	yes	Heat-up	800
Stain (Stain tech.)	403	yes	3:00	3:00	450	0:30	60	770	1:00	--	--	770	0:00	yes	Heat-up	770
Glaze (Stain tech.)	403	yes	3:00	3:00	450	0:30	60	770	1:00-2:00	--	--	770	0:00	yes	Heat-up	770
Stain (Layering tech.)	403	yes	3:00	3:00	450	0:30	60	725	1:00	--	--	725	0:00	yes	Heat-up	725
Glaze (Layering tech.)	403	yes	3:00	3:00	450	0:30	60	725	1:00	--	--	725	0:00	yes	Heat-up	725
ADD-ON with glaze	403	yes	3:00	3:00	450	0:30	60	725	1:00	--	--	725	0:00	yes	Heat-up	725
ADD-ON after glaze	403	yes	3:00	3:00	450	0:30	50	700	1:00	--	--	700	0:00	yes	Heat-up	700

*All firing programs are only recommendations of the ceramic producer and can be modified individually

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5.2 Firing Programs* Ivoclar e-max® CAD Crystallizationparameter

Special Mode

	Start temperature [°C]	Pre dry	Pre drying time [min]	Closing time [min]	Soak temperature [°C]	Soak time [min]	Heat rate 1 [°C/min]	Final temperature 1 [°C]	Hold time 1 [min]	Heat rate 2 [°C/min]	Final temperature 2 [°C]	Hold time 2 [min]	Opening temperature [°C]	Vacuum	Release vacuum	Vacuum end [°C]
Crystalliz. HT / LT	403	no	--	6:00	550	0:00	90	820	0:10	30	840	7:00	700	yes	Hold time	7:00
Crystalliz. MO	403	no	--	6:00	550	0:00	60	770	0:10	30	850	10:00	700	yes	Hold time	10:00
Correction	403	no	--	6:00	550	0:00	90	820	0:10	30	840	3:00	700	yes	Hold time	3:00

*All firing programs are only recommendations of the ceramic producer and can be modified individually

5.2 Firing Programs* Ivoclar e-max® CAD ZirCAD

Special Mode

	Start temperature [°C]	Pre dry	Pre drying time [min]	Closing time [min]	Soak temperature [°C]	Soak time [min]	Heat rate 1 [°C/min]	Final temperature 1 [°C]	Hold time 1 [min]	Heat rate 2 [°C/min]	Final temperature 2 [°C]	Hold time 2 [min]	Opening temperature [°C]	Vacuum	Release vacuum	Vacuum end [°C]
Regeneration bake	403	no	--	0:18	403	0:00	65	1050	15:00	--	--	--	750	no	--	--

*All firing programs are only recommendations of the ceramic producer and can be modified individually

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5.2 Firing Programs* Vita VM 13

Professional Mode

	Start temperature [°C]	Pre dry	Pre drying time [min]	Closing time [min]	Soak temperature [°C]	Soak time [min]	Heat rate [°C/min]	Final temperature [°C]	Hold time [min]	Temper temperature [°C]	Temper time [min]	Opening temperature [°C]	Opening time [min]	Vacuum	Release vacuum	Vacuum end [°C]
Wash opaque	500	yes	1:00	1:00	500	0:30	75	890	2:00	--	--	890	--	yes	Heat-up	890
Wash opaque paste	500	yes	2:00	2:00	500	0:30	75	890	2:00	--	--	890	--	yes	Heat-up	890
Opaque	500	yes	1:00	1:00	500	0:30	75	890	1:00	--	--	890	--	yes	Heat-up	890
Opaque paste	500	yes	2:00	2:00	500	0:30	75	890	1:00	--	--	890	--	yes	Heat-up	890
Wash opaque NPA	500	yes	1:00	1:00	500	0:30	75	940	2:00	--	--	940	--	yes	Heat-up	940
Wash paste NPA	500	yes	2:00	2:00	500	0:30	75	940	2:00	--	--	940	--	yes	Heat-up	940
Opaque NPA	500	yes	1:00	1:00	500	0:30	75	920	1:00	--	--	920	--	yes	Heat-up	920
Opaque paste NPA	500	yes	2:00	2:00	500	0:30	75	920	1:00	--	--	920	--	yes	Heat-up	920
Margin	500	yes	3:00	3:00	500	0:30	55	890	2:00	--	--	890	--	yes	Heat-up	890
Effect liner	500	yes	3:00	3:00	500	0:30	55	890	1:00	--	--	890	--	yes	Heat-up	890
Dentin 1	500	yes	3:00	3:00	500	0:30	55	880	1:00	--	--	880	--	yes	Heat-up	880
Dentin 2	500	yes	3:00	3:00	500	0:30	55	870	1:00	--	--	870	--	yes	Heat-up	870
Glaze	500	no	--	0:00	500	0:30	80	880	2:00	--	--	880	--	no	--	--
Glaze Accent	500	yes	2:00	2:00	500	0:30	80	880	1:00	--	--	880	--	no	--	--

*All firing programs are only recommendations of the ceramic producer and can be modified individually
** Refer to the alloy manufacturer's instructions

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5.2 Firing Programs* Ceramco 3

	Start temperature [°C]	Pre dry	Pre drying time [min]	Closing time [min]	Soak temperature [°C]	Soak time [min]	Heat rate [°C/min]	Final temperature [°C]	Hold time [min]	Temper temperature [°C]	Temper time [min]	Opening temperature [°C]	Opening time [min]	Vacuum	Release vacuum	Vacuum end [°C]
Oxide	500	no	0:00	1:00	500	0:00	55	**	**	--	--	**	**	**	**	**
Paste opaque	500	yes	4:00	2:00	500	0:30	100	975	0:00	--	--	975	0:00	yes	Heat-up	975
Powder opaque	650	yes	3:00	2:00	650	0:30	70	970	0:00	--	--	970	0:00	yes	Heat-up	970
Margin	650	yes	5:00	4:00	650	0:30	70	965	1:00	--	--	965	0:00	yes	Heat-up	965
Final shoulder	650	yes	3:00	2:00	650	0:30	70	920	0:30	--	--	920	0:00	yes	Heat-up	920
Final shoulder with glaze	650	yes	3:00	2:00	650	0:30	70	925	0:30	--	--	925	0:00	yes	Heat-up	925
Dentin	650	yes	5:00	3:00	650	0:30	45	930	1:00	--	--	930	0:00	yes	Heat-up	930
Natural glaze	650	no	--	4:00	650	0:30	45	920	0:30	--	--	920	0:00	no	--	--
Overglaze	650	yes	3:00	3:00	650	0:30	55	925	0:30	--	--	925	0:00	no	--	--
Correction	650	yes	4:00	3:00	650	0:30	55	920	0:00	--	--	920	0:00	yes	Heat-up	920

*All firing programs are only recommendations of the ceramic producer and can be modified individually
** Refer to the alloy manufacturer's instructions

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5.2 Firing Programs Name: _____

Professional Mode

	Start temperature [°C]	Pre dry	Pre drying time [min]	Closing time [min]	Soak temperature [°C]	Soak time [min]	Heat rate [°C/min]	Final temperature [°C]	Hold time [min]	Temper temperature [°C]	Temper time [min]	Opening temperature [°C]	Opening time [min]	Vacuum	Release vacuum	Vacuum end [°C]
Oxide																
Powder opaque																
Paste opaque 1																
Paste opaque 2																
Margin 1																
Margin 2																
Dentin 1																
Dentin 2																
Glaze with vac.																
Glaze no vac.																
Stains																
Correction																

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6. Important notes for the processing of Lithium Disilicate VARIO PRESS 300.e

6.1 Investment

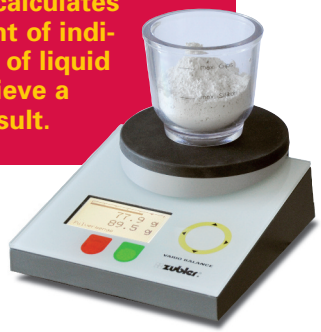
- Recommended investment with respective quantity of liquid:
  - Zubler HS-PC
    25ml total liquid on 100g powder

„**Speed investing**“:

- The processing temperature of the investment, the liquid and the water should be between 20-23°C. Do not store in a refrigerator!!!
- Check the best-before-date of the investment and liquid.
- Use distilled water only.
- The concentration of the liquid/water mix influences the hydration expansion and consequently the fit.

TIP:

The VARIO BALANCE programmable scale precisely calculates the required amount of individual components of liquid and powder to achieve a constant perfect result.



6.2 Mixing of Investment

- Zubler HS-PC
  Pre-evacuation: 20s
  Mixing under vacuum: 60s
  Rotation of the mixing device: min. 420 r.p.m.
- From time to time check the vacuum efficiency of the mixing device.
- The vacuum must always have maximum “performance”. Insufficient vacuum can cause rings to crack or break.

6.3 Preparation of the ring

- **Spruing of the pattern:**
  Molar, premolar, tripartite bridge: Ø 3,5mm
  Front, inlay: Ø 3,0mm
  Length of sprue: 3 – 8mm
- Single objects with one sprue.
- 3-unit bridges on both bridge abutments, no sprue at the pontic.
- Always attach the sprues in the direction of flow of the ceramic and at the thickest part of the wax-up.
- The maximum height (wax objets + sprue) of 16mm must not be exceeded.
- Sprue angle: 45° - 60°

Choice of ring size:

- 100g ring for 3g pellets
  200g ring for 3g resp. 6g pellets
- Bridges can only be pressed in the 200g ring.
- Design of the attachment points round and slightly tapered, no sharp angles or edges.
- Minimum distance between the objects: 3mm
- Minimum distance to the silicone ring: 10mm
- Wax weight up to max. 0,75g ⇒ 3g Pellet for 100g or 200g ring

  Wax weight up to max. 2,00g ⇒ 6g Pellet for 200g ring only

6.4 Investing

Pay attention to the attached brochure regarding the VARIO BALANCE dosing device.

- The mixing bowl should be moist.
- Choose the desired concentration
- The components will be weighed in the following order: Liquid, water then powder
- When the powder is being put into the mixing bowl, start the timer.
- With every investment the total setting time is different (e.g. Zubler Press-max 25min.)
- To achieve repeatable results, all steps should always be carried out in the same way.
  - For the same quantities, always use the same mixing bowl.
  - Using different size mixing bowls will result in different expansion results.
  - Spatulate by hand (e.g. 10 sec.)
  - Depending on the investment, always choose the same mixing program.
- Using light vibration while pouring the investment into the ring.
- Seat the levelling top at an angle, to avoid trapping air (blisters) at the bottom of the ring.
- While setting, place the filled ring in a vibration-free place.
- The setting time must be followed exactly (e.g. 25 min for Zubler Press-Max)
- Remove the top and base of the ring with a rotating movement.
- Remove the investment ring from the silicone ring former. Let the ring set for a minimum of 1 minute to ensure complete moisture evaporation before placing it in the burnout furnace.

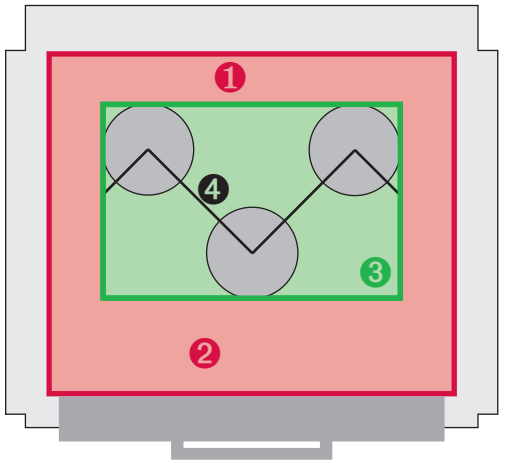
6.5 Burnout furnace

Set burnout temperature to 850°C

- Keep in mind that the distribution of temperature depends on the volume of the furnace chamber, the number and position of the heating elements and the number of the rings.
- Maintain the burnout furnace according to the manufacturer's instructions.
- Check the temperatures on a regular basis and calibrate when necessary
- Pay attention to the correct position of the ring inside the burnout furnace (see schema of the burnout furnace)
- Depending on the number of rings inside the chamber, increase the hold time by 15 minutes for each additional ring.
- When the door is opened the temperature in the burnout furnace declines by up to 80°C, the effective holding time starts only when the oven reaches the set temperature (e.g. at 850°C) for a

  100g ring: minimum 45min.
  200g ring: minimum 60min.

How to position rings in a burnout furnace



1. The distance of the rings to the inside walls and to each other must be at least 2,5cm (1inch). This is shown in the illustration as red zone 1.
2. The door of the furnace makes a homogeious distribution of heat impossible. Therefore, the ring may not be placed in the front third of the furnace (for large furnaces, this applies to one quarter of the front area). This is shown in the illustration as red zone 2.
3. Place the rings in the remaining area of the furnace chamber left over from points 1) and 2). This is shown in the illustration as the green zone.
4. To avoid the development of shades among the rings, do not position them in a strait line.

6.6 Pressing

- Do not pre-heat the ingot
- Do not pre-heat the plunger

Alox-Plunger:

WARNING! any residue or deformation of the plunger could result in incomplete pressing, cracking or splitting.

- Use separator to facilitate separation.
- Make sure to use the correct program for the ring size and ingot size.

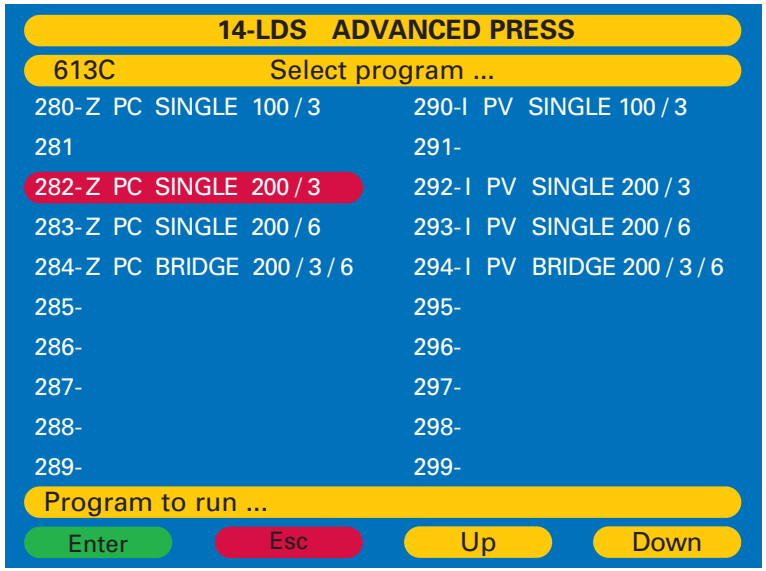
Advantages of using disposable plungers:

- The same cooling behavior as investment
- No need to remove ceramic remains
- No separator needed
- The Condition of the disposable plungers is always optimal
- Easier and faster devesting

VARIO PRESS® 300

With the **VARIO PRESS®** 300 you should use the standard programs prescribed by the manufacturer. e.g. Ivoclar: (See page 33)

- E.max LT/MO/HO 100g
- E.max LT/MO/HO 200g
- E.max HT 100g
- E.max HT 200g



Z PC	-	for Zubler **HS-PC**
I PV...	-	for PressVest (Ivoclar)
Single	-	for Single parts
Bridge	-	for bridges or blocked parts
100	-	for 100g ring
200	-	for 200g ring
3 / 6	-	for 3g or 6g Pellets

WARNING!

Do not use 2 ingots in a single ring.

VARIO PRESS® 300.e

With the **VARIO PRESS®** 300.e you have at your disposal the innovative Advanced Press programs for processing lithium disilicate.

- If the VARIO PRESS 300 is used as a combination furnace or with an idle temperature below 700°C, it will be necessary to wait for approximately 10 minutes after the furnace indication, before placing the ring on the platform.
- The total time allowable for removing the ring from the burnout oven, placing the ingot and plunger into the ring and placing the combined elements on the Vario Press platform, should not exceed 40 seconds.

Note: Always place the ingot into the ring, print side up.

- At the end of the pressing process remove the ring and let it cool in a "draft" free area or a place without moving air. Never try to decrease the cool time by using compressed air.

Always pay attention to the press time displayed on the screen at the completion of a program. It is a good indicator of press completion.

Optimal press time:

- 1:32 - 2:32min for 3g pellets
- 1:32 - 3:32min for 6g pellets

6.7 Divesting

Always follow the manufacturer's instructions. For e.max, follow Ivoclar's recommendations.

- Separate the ring with a cutoff wheel at the height of the plunger. By using a gypsum knife you can break the ring at the predetermined breaking point.
- Always use polishing beads to divest the pressed objects (rough and fine divestment). Do not use Al_2O_3.
- Rough divestment is carried out with polishing beads at 4 bar (58 psi) pressure.
- Fine divestment is carried out with polishing beads at 2 bar (29 psi) pressure.
- Observe the blasting direction and distance to prevent damage to the object margins during divestment.

6.8 Further Information

Hint:

The reaction layer which develops during pressing lithium disilicate , depands also on the type of the investment which was used.

Our internal examinations cannot consider all investment materials offered in the market. However, the following investments show good results when processing lithium disilicate:

- IPS PressVEST Speed (Ivoclar)
- Zubler HS-PC

Intentionaly blank

FZ VARIO
Central suction systems

FZ1 VARIOmaster®
Multi suction unit

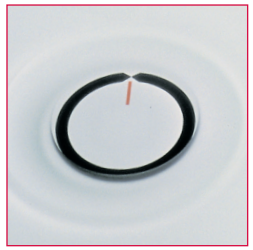
VARIO 200
Ceramic firing furnace

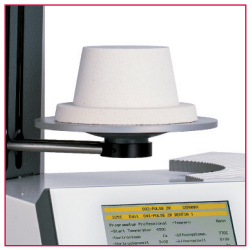
VARIO BALANCE
Dosage device

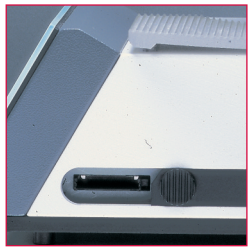
Ceramay
Consept Press

MICROSTAR®
Disposable plungers

Zubler® Flex Ring
Pressing accessories







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Note: